

CHESTERFIELD COUNTY
WATER AND SEWER SPECIFICATIONS

ADDENDUM

JUNE 1, 2006

PART I

REVISED PAGES

PROCEDURES FOR INSTALLING 6 INCH LATERALS
TO EXISTING SANITARY SEWER LINES

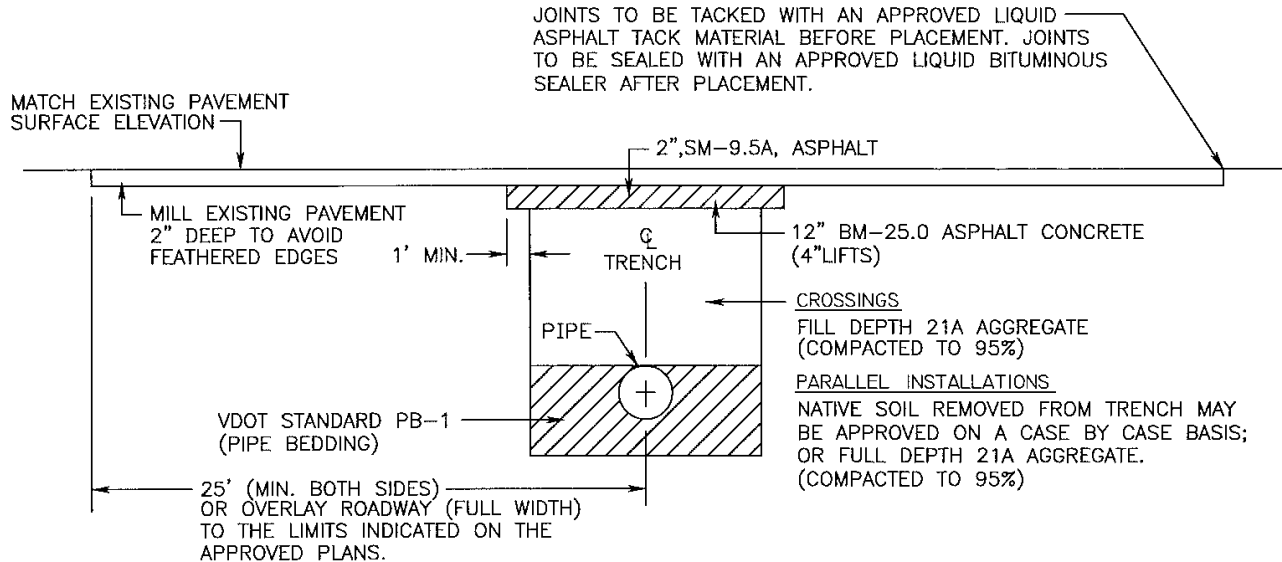
When it is necessary to tap the main sewer line and install a 6 inch sewer connection, the following guideline shall be adhered to:

1. The work shall be done by an approved utilities contractor specializing in the installation of public water and sewer lines. Upon request, the County will furnish a list of known utilities contractors acceptable to the County to perform such work.
2. If a water line is to be crossed, the tap must be made on Monday - Thursday.
3. The contractor shall notify the Utilities Department's Chief Inspector (748-1576) 48 hours prior to beginning construction.
4. When tapping the sewer line, a mechanical hole cutter and an approved saddle must be used. The tap must be made so that the 6 inch connection will enter the main line on a slope no greater than 45 degrees. No connection shall be cut into the top of a sewer line.
5. When tapping into a manhole, bring the 6 inch connection in above the shelf, but no higher than two feet above the lowest invert. A channel to carry the flow from the connection must be built inside the manhole.
6. The 6 inch connection is to be constructed only to the property line and/or the edge of the easement in which the main sewer line lies, or as directed by the inspector.
7. The contractor is responsible for damages to any existing utilities and shall have in his possession and/or furnish evidence upon request of having sufficient insurance to cover any damages that may occur.
8. Work in the State Right of Way:
 - a. The VDOT must grant permission to install a sewer lateral within their right of way. The utilities contractor is responsible for making application to Virginia Department of Transportation for permission to install a 6 inch connection within their right of way and for providing the Chief Inspector a copy of the permit before commencing work.
 - b. Use the necessary signs and barricades to divert traffic.
 - c. One-way traffic must be maintained at all times.

PART II

REVISED PAGES

CHESTERFIELD COUNTY DEPARTMENT OF PUBLIC UTILITIES VDOT APPROVED



NOTES:

1. ALL BACKFILL AND COMPACTING SHALL BE IN ACCORDANCE WITH CURRENT VDOT STANDARDS AND SPECIFICATIONS.
2. WHENEVER THE PAVEMENT IS PERMITTED TO BE CUT, NOT OVER ONE-HALF OF THE ROADWAY SHALL BE DISTURBED AT ONE TIME THE FIRST OPENING SHALL BE COMPLETELY RESTORED TO SATISFACTORY, TRAVELABLE CONDITION BEFORE THE SECOND HALF CAN BE OPENED.
3. IF THE OPEN CUT AREA IS GREATER THAN 16 SQ. FT. THEN THE PERMITTEE SHALL MILL AND RESURFACE ALL (ASPHALT) CONCRETE ROADWAY: AND RESURFACE ALL OTHER ROADWAY WITH LIKE MATERIAL THAT IS EXISTING FOR A DISTANCE OF 25 FEET ON EACH SIDE OF THE DISTURBED AREA FROM EDGE-OF-PAVEMENT TO EDGE-OF-PAVEMENT OR AS INDICATED ON THE APPROVED PLANS.
4. A GEOTECHNICAL ENGINEER SHALL ASCERTAIN THE CAUSE AND CERTIFY THE METHOD FOR ALL PAVEMENT STRUCTURE FAILURES AND BE PRESENT DURING BACKFILL OPERATIONS TO CERTIFY THE AGGREGATE HAS BEEN INSTALLED AT (95%) COMPACTION RATE.
WHERE THE PAVEMENT IS DISTURBED OR DEEMED WEAKENED IN ITS ENTIRETY OR SUCH PORTIONS OF IT AS DEEMED DESIRABLE BY VDOT SHALL BE RESTORED OR REPLACED IN A MANNER WHICH IS SATISFACTORY TO VDOT'S RESIDENT ENGINEER OR HIS/HER REPRESENTATIVE.

DATE:
JAN. 1996

REVISIONS:
JUNE 2006

TYPICAL SECTION OPEN CUT TRENCH RESTORATION DETAIL
FOR WATER AND SEWER LINE INSTALLATIONS
IN ALL PAVED ROADS

DRWG. NO.
PAV-2

PART III

REVISED PAGES

PART III

COUNTY

WATER AND SEWER PROJECT

CONSTRUCTION SPECIFICATIONS

CHESTERFIELD COUNTY, VIRGINIA

INSTRUCTIONS for viewing and/or printing this document:

To view PART III, click on the blue highlighted area above. After pulling up PART III, click on “**BOOKMARKS**” in the left hand margin of the document to locate various sections within the document. To print the document in its entirety, click FILE – PRINT. (When printing the document, please remember to print this table of contents and include it in your book.)

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have or assert any claim for, nor shall he be entitled to any additional compensation or damages on account of such delays. If the delay is due solely to the negligence of the Owner, or any of its officers or employees, the Contractor may also request from the Owner an adjustment in the Contract Price for actual costs incurred by the Contractor to perform and complete the Work. The Contractor shall be entitled to an adjustment in Contract Price only for actual costs, as that term is defined in Paragraph 38, in the General Conditions, entitled Extra Work-Force Account. If the owner determines that the delay is of the nature described in this subparagraph and that an adjustment in price is warranted, the owner may, in writing, grant an adjustment in the price for the Work in amount deemed appropriate by the Owner.

Within ten (10) calendar days from the beginning of any delay for which Contractor is entitled to an extension of time or additional compensation, the Contractor shall submit in writing to the Owner, with a copy to the Engineer, its request for adjustment in price or extension of time for the completion of the Work. Any such request shall set forth the cause and particulars of the delay, the details of the delay, and documentation supporting the extension or adjustment requested. The Owner shall review the information and documentation submitted by the Contractor and shall respond to the Contractor

in writing. If the Contractor fails to comply with any requirement of this subparagraph the Contractor shall be precluded from making any claim for an adjustment in the Contract Price or extension of time for Completion of Work due to the delay. In no event shall the Owner's officers, agents or employees have any liability to the Contractor, any subcontractors, or any agents, servants or employees of the Contractor or sub-contractors with respect to or arising out of any actual or alleged delay in the Contractor's performance.

The Owner may delay the beginning of the Work or any part thereof because it has not obtained a necessary property interest in the land on which the Work or some portion of the Work, is to be performed. The Contractor shall have no claim for additional compensation or damages on account of such delay, but shall be entitled to request an extension of time as herein provided.

41. TERMINATION FOR BREACH OF NON-PERFORMANCE

If the Contractor fails to perform the Work promptly and diligently, or if the Contractor breaches the Agreement in any other way, the Owner may:

- A.** After providing the Contractor with fifteen (15) days written notice, supply any workmen, equipment or materials necessary to

When the Work is complete and the area cleaned up, the Contractor shall request a Final Inspection of the Work by the Engineer and Owner. After the Final Inspection, the Engineer shall prepare a Punch List. After the Contractor has completed all Work on the Punch List, and the project is ready for Final Acceptance by the Owner, the Contractor shall request in writing an inspection for Final Acceptance of the Work by the Engineer and Owner.

47. USE OF WORK

Whenever in the opinion of the Engineer or Inspector any portion of the Work is completed or in acceptable condition for use, it may be used by the Owner for the purpose intended. However, such use by the Owner does not constitute acceptance of any portion of the Work, or a waiver of any of the provisions of the Contract Documents.

48. PAYMENT

If the Contractor performs properly all of the obligations of the Contract Documents, the owner shall pay the Contractor for the performance of the Work in the manner and within the time specified in the Contract Documents. The Owner also agrees to pay the Contractor for Extra Work in accordance with the terms of the Contract Documents. The Contractor shall make requests for payment by submitting the original and four (4) copies of the monthly estimate for partial payment to the Owner on a form acceptable to the Owner, as set forth in Paragraph 50 of the General Conditions, entitled Monthly Estimates.

49. SALES AND USE TAXES

The Owner shall make no payment to the Contractor for sales or use tax that is not included in the Contract Price at the time the Agreement is executed by the Owner.

50. MONTHLY ESTIMATES AND RETAINAGE

On the 20th day of each month or at any other regular time agreed upon by the Owner and Contractor, the Contractor and the Inspector shall prepare and submit to the Owner a monthly estimate for Partial Payment. The monthly estimate shall cover items of work for which the Contractor is entitled to be paid since the last previous monthly estimate was submitted, including (1) the value of the Work done, (2) major items of equipment or materials delivered to the site of the project to be installed by the Contractor, as substantiated by submitted invoices and as approved by the inspector, and (3) materials incorporated into the Work.

For the purpose of such audits, inspections, examinations and evaluations, the Owner's agent or authorized representative shall have access to the records from the effective date of the Agreement, for the duration of the Work, and until two (2) years after the date of Final Payment by Owner to Contractor pursuant to the Contract Documents.

Owner's agent or its authorized representative shall have access to the Contractor's facilities, shall have access to all necessary records, and shall be provided adequate and appropriate work space, in order to conduct audits in compliance with this article. Owner's agent or its authorized representative shall give Contractor reasonable advance notice of intended audits.

Contractor shall require all subcontractors, insurance agents, and materials suppliers (collectively referred to as "payees") to comply with the provisions of this article by insertion of the requirements hereof in a written contract agreement between Contractor and payee. Failure to obtain such written contracts which include such provisions shall be reason to exclude some or all of the related payees' costs from amounts payable to the Contractor pursuant to the Agreement.

If an audit inspection or examination performed pursuant to this paragraph, discloses overcharges of any nature by the Contractor to the Owner in excess of five percent (5%) of the total billings made by the Contractors pursuant to the Contract Documents, the actual cost of the Owner's audit shall be paid by the Contractor.

55. WARRANTY PERIOD

The Contractor guarantees the quality and workmanship of the Work beginning on the date of Final Acceptance. The Warranty Period shall be one year, except that the Warranty Period for road work shall be three years or the period established by the Virginia Department of Transportation's latest requirements, whichever is longer.

56. NOTIFICATION TO PROPERTY OWNERS

Contractor shall properly notify all property owners two (2) weeks prior to the start of any construction (including land clearing). Notification shall be in the form of a letter similar to the "sample" reflected in the County's latest Water and Sewer Specifications. (See sample "NOTIFICATION" letter - Page NOT-1).

59. PROCEDURES FOR CLAIMS AND DISPUTES

A claim is a demand or assertion by the Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. Claims must be initiated by written notice. The responsibility to substantiate claims shall rest with the Contractor.

Claims by the Contractor must be initiated within 21 days after occurrence of the event giving rise to such claim or within 21 days after the claimant first recognizes the condition giving rise to the claim, whichever is later. Claims must be initiated by written note to the Architect or Engineer and Owner. Submittal of a claim by the Contractor within the time limits prescribed by this paragraph shall be required as a condition precedent to the institution of litigation by the Contractor with respect to the subject matter of that claim.

64. PROGRESS MEETING

Contractor shall hold a progress meeting at a time, date and frequency set forth in the pre-construction meeting to review progress to date and resolve all questions for the upcoming progress meeting. Engineer is responsible for the preparation of the progress meeting agenda and minutes. Engineer will forward progress meeting agenda to the Contractor for any additions to agenda.

AGREEMENT

THIS AGREEMENT, made this _____, by and between **the County of Chesterfield, Virginia**, hereinafter called "OWNER" and _____ doing business as _____ (an Individual) or (a Partnership) or (a Corporation) hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR shall commence and complete construction of

2. The CONTRACTOR shall furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.
3. The CONTRACTOR shall commence the work required by the CONTRACT DOCUMENTS within Ten (10) calendar days after the date of the NOTICE TO PROCEED. Work shall be substantially complete within _____ calendar days unless the period for completion is extended otherwise by the CONTRACTOR DOCUMENTS. Work shall be finally complete and ready for final payment within _____ calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.
4. The CONTRACTOR shall perform all of the WORK described in the CONTRACT DOCUMENTS and shall comply with the terms therein for the sum of \$____ or as shown in the BID schedule.
5. The term "CONTRACT DOCUMENTS" means and includes the following:
 - (A) Instructions to BIDDERS
 - (B) BID FORM
 - (C) BID BOND
 - (D) Agreement
 - (E) General Conditions
 - (F) Supplemental General Conditions

COUNTY NO. _____

(G) Labor and Material Payment BOND

(H) Performance BOND

(I) Notice to Award

(J) Notice to Proceed

(K) Change Order

(L) DRAWINGS prepared by _____
numbered _____ through _____, and dated _____.

(M) SPECIFICATIONS prepared or issued by _____
dated _____, 20____.

(N) ADDENDA:

No. _____, dated _____, 20____.

No. _____, dated _____, 20____.

No. _____, dated _____, 20____.

No. _____, dated _____, 20____.

No. _____, dated _____, 20____.

No. _____, dated _____, 20____.

6. The OWNER shall pay the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.

7. The undersigned Contractor shall indemnify and hold the County of Chesterfield, Virginia (the "County"), and its officers, agents, and employees harmless from and against all claims, damages, losses and expenses including attorneys fees arising out of or resulting from the performance or nonperformance of the work, including but not limited to any such claim, damage, loss or expense, that is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom, or to economic loss; provided, however, that the Contractor's indemnification obligation under this agreement shall be limited to claims, damages, losses, and expenses caused in whole or in part by any act or omission of the Contractor, or any Subcontractor (a "Subcontractor") performing work required by the Contractor's Contractor or any Subcontractor my be liable, regardless of whether or not such claims, damages, losses, and expenses are caused in part by a party indemnified hereunder.

COUNTY NO. _____

3.05 BLASTING

- A. Blasting operations shall be in strict accordance with "Rules and Regulations Governing Manufacture, Storage, Handling, Use and Sale of Explosives" issued by the Department of Labor and Industry of Virginia and any County ordinances. All blasting shall be done at the sole risk of the Contractor and shall be done only by experienced licensed personnel. Occupants of nearby structures shall be notified prior to beginning blasting operations.

- B. When blasting is required, the Contractor shall conform to the following requirements:
 - 1. Blasting will not be permitted before 9:00 A.M. or after 4:00 P.M. on Monday through Friday.
 - 2. Blasting on Saturdays, Sundays and holidays will not be permitted.
 - 3. The Contractor shall not be permitted to blast under any conditions unless a representative of the Owner is present.
 - 4. The Contractor shall, each day when necessary to blast, set up an approximate schedule of blasting operations, and provide 24 hours notice to the Owner, and property owners with occupied buildings within 1000 feet of blasting.
 - 5. The Contractor shall use mats to minimize noise impact on nearby residents.
 - 6. The County reserves the right to require the Contractor to have a repair crew and equipment available on-site to repair any damage caused to the Chesterfield County utility by blasting operations.
 - 7. Before any blasting can commence, a blasting survey must be conducted in order to assess the quality of residential homes within a 500 feet radius.
Additional Requirements (See Appendix G).

3.06 BACKFILL FOR TRENCHES

- A. General: After the installation of the pipe has been field inspected, the trenches shall be backfilled with fine, loose earth deposited carefully on both sides of the pipe or with the appropriate fill material as specified in the County's Standard Details Section. Large clods, frozen earth, sticks, stones, and other unsatisfactory material must be excluded from the backfill around and to 12" above the pipe. The fill or in the case of plastic pipe where stone is used for bedding and backfill to the top of the pipe, the stone shall be carefully rammed by hand or pneumatic tamping methods under, on both sides and on top of the pipe. The remainder of the backfilling may be done by hand or with mechanical equipment in lifts no greater than 12 inches. Where settlement occurs, the trench shall be refilled, contoured

and compacted by an approved method to conform to the surface of the ground. Sheeting and bracing shall, in general, be removed as the backfilling progresses, and in such a manner as to avoid the caving of the trench. Voids left by the withdrawal of the sheeting or shoring shall be carefully filled and rammed. Where in the opinion of the Owner, damage is liable to result from the withdrawal of the sheeting it shall be left in place. No rock should come in contact with pipe.

1. Sewer pipe shall have minimum bedding as shown on the County Standard Details.
 2. Backfill shall be compacted in layers with the following percentage of maximum density at optimum moisture content of $\pm 2\%$ as determined by ASTM D698.
 - a. 95 percent under pavements and road shoulders.
 - b. 90 percent in other unpaved areas.
- B. Under Existing Roadways and Pavement: Backfill for trenches under roadways and other paved areas shall be backfilled to the top with 21-A stone, except that all fill above the pipe shall be deposited in layers not exceeding 6 inches in thickness. Each lift shall be thoroughly compacted by mechanical or hand tamping methods, in accordance with VDOT requirements so that when the backfilling is completed, the paving may be replaced as specified in the section entitled Construction in Public Streets, Roads and Alleys.
- C. Clay dams: Clay material with an imperviousness of 10-3 cm/sec shall be used in clay dams. Material shall be compacted as indicated in paragraph A above. Inspector shall approve clay material prior to use.

3.07 BACKFILL FOR STRUCTURES

Around and adjacent to structures, backfill shall be of material of suitable stability and perviousness. Backfill shall be placed in 6 inch lifts, each lift being compacted by an approved method. No backfill shall be placed against a structural wall until all connecting structural members are in place. It shall be the Contractor's responsibility to provide compaction to 95% per ASTM D-698. The Contractor shall provide adequate protection to all structures during backfilling and use every precaution to avoid damaging or defacing them.

3.08 CONSTRUCTION IN PUBLIC STREETS, ROADS AND ALLEYS

Unless superseded by other specifications or VDOT permit requirements the following shall apply: The Contractor's operations in public streets, roads or alleys, shall be confined to as small a space as is practicable, so as not to cause undue inconvenience to the public or abutting properties, and shall be subject at all times to the approval of the County and Virginia Department of Transportation (VDOT). The word VDOT used in the previous sentence means the individual, group or governmental body that has jurisdiction over the streets, roads and alleys. Unless otherwise directed by VDOT, the Contractor shall perform the proposed construction on public streets, roads and alleys as follows:

APPENDIX G

BLASTING REQUIREMENTS

MEETING AGENDA FOR A BLASTING SURVEY THAT IS REQUIRED BEFORE BLASTING CAN BEGIN IN A RESIDENTIAL NEIGHBORHOOD.

Before any blasting can commence a blasting survey must be conducted in order to assess the quality of residential homes within a 500 feet radius. This survey will form a database of pre-blast and post-blast structural conditions of the buildings in the area and allow the construction team to maintain a safe guard on liability. The county Utilities department and blasting company will conduct a meeting in order to explain the project, why the blasting is needed, why a pre-blast survey must be performed, and alleviate any fears or concerns the citizens might have.

Because the use of blasting is required it is important to notify families within the 500 feet area in an upfront and honest way. The families will have questions and concerns. The meeting will be scheduled well in advance of the blasting activity to allow for the survey to be conducted in an honest and thoughtful manner allowing the families to feel more comfortable about the situation.

Notification Methods:

- A. Notify families, by letter, two weeks prior to the meeting.
- B. Notify families, by hand delivery, with a notice one week before scheduled meeting.

Contents of the Letter/Memo:

The letter should contain the following items of information:

Date: Two weeks before scheduled meeting.

Location: Meeting will be held at Bon Air Library.

Attendees:

Blasting Company or Pre-blast survey company.

Chesterfield County Officials - Utilities, Director, Risk Management, Loss Prevention Manager.

Representatives from each household.

Purpose of the meeting:

Describe the construction project and explain the need for the blasting due to the rocky soil conditions. The letter will also contain brief information regarding the following items:

- Description of a blasting survey, what it is for, and how it shall be conducted.
- Describe who will be conducting the survey
- Blasting company representatives.

- Items of Importance:

The importance of attending the meeting by at least one representative of the household in order to gain knowledge of the survey, why it is needed and allow time for questions and answers.

Meeting Agenda:

This agenda will be handed out at the meeting site. The agenda will cover several key items and will be lead by specific personnel as follows:

1. Construction Project Overview - Importance and need of the water line: Utilities Manager.
2. Definition of the blasting procedure/soil conditions: Blasting Company.
3. Discuss operation and safety issues of blasting: Blasting Company.
4. County regulations and requirements: County Fire Marshall.
5. Define and describe the blasting survey, the purpose of the survey, and the process of conducting the survey: Blasting Company.
6. How and when the survey will be conducted:
 - a. Date, time, and location.
7. Discuss the post evaluation survey, when and how it will be conducted.
 - a. Within one week after the blast.
8. Questions and Answers: All Attendees as necessary.

After the meeting there will be a sign up sheet. Each family should choose two (2) different dates and times when at least one responsible family member will be home for the survey.

By allowing the families to choose two different times, the survey team will cut down on "no-shows" or "emergencies" so a complete survey can be made prior to the blast.

As part of the sign up sheet, notify family members that the construction team will hold families accountable to those times and dates and will assume no liability if after two attempts to conduct the survey no access was gained to the structure.

The Meeting should be concluded within two hours. Additional time will then be available for the families to sign-up for the survey.

INSURANCE REQUIREMENTS:

The Contractor shall provide adequate protection for all utilities (power, communication, water, sewer, etc.) and private property which may be endangered by the performance of the work of this Contract. Liability insurance shall be required to cover injuries or damages to persons or property that might result from blasting operations in the minimum amounts of:

General Liability insurance \$5,000,000 Each Occurrence insuring the blasting operations and naming Chesterfield County as an Additional Insured.

Commercial Automobile Liability \$1,000,000 Each Occurrence combined single limit

Workers Compensation Insurance Statutory Amount:

NOTICE TO NEIGHBORHOOD:

At least 30 days before the initiation of blasting operations, the contractor must notify, in writing, all residents or owners of dwellings or other structures within 500 feet of the permit area of how a pre-blast survey may be requested. They must also notify the public, by publication in a local newspaper at least 30 days before the initiation of blasting. Survey requests received more than 10 days before the initiation of blasting will be conducted before blasting begins.

NEIGHBORHOOD MEETING REQUIREMENT:

At least 15 days before the initiation of blasting operations, the contractor must meet with interested residents or owners of dwellings regarding the blasting operations. Coordination with Chesterfield County Public Affairs regarding the publication of the meeting and the meeting agenda is required.

PRE-BLAST SURVEYS OF STRUCTURES WITHIN 500 FEET OF THE BLAST SITE:

Pre-blast surveys shall be offered to the owners and/or occupants of structures and utility lines located within 500 feet of the blast site. The pre-blast surveys shall be conducted by a firm regularly engaged in performing pre-blast surveys and which is independent of the blasting contractor. The pre-blast surveyor shall promptly conduct a pre-blast survey of the identified structures unless permission for a survey has been denied by the owner or occupant of the structure, or after due diligence on the part of the surveyor, contact with the owner or occupant of the structure could not be made. The surveyor shall promptly conduct a pre-blast survey of utility company structures if a utility company representative requests one from the surveyor.

WRITTEN REPORTS:

The surveyor shall determine the condition of the dwelling or structure and shall document any existing damage and other physical factors that could reasonably be affected by the blasting. The surveyor shall examine the interior as well as the exterior structure and shall document any damage by means of photographic or videocassette methods. Structures such as pipelines, cables, transmission lines, cisterns, wells and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.

The written report of the survey shall be signed by the person who conducted the survey. All surveys shall be completed by the surveyor before the initiation of blasting. All surveys shall be conducted by a disinterested third party, regularly engaged in performing pre-blast surveys.

All photographs shall be identified by number. The written report shall be signed by an authorized representative of the company or firm that performed the pre-blast surveys.

COPIES OF PRE-BLAST SURVEY REPORTS:

Copies of the pre-blast survey report shall be promptly provided to the contractor and made available to the Fire Marshal and Utilities Department. Upon request, the contractor shall provide to the owner of the structure making the request, a copy of the pre-blast survey of the requesting party's surveyed structure. The contractor may not charge the owner or occupant for a copy of the pre-blast survey.

NOTICE:

The Utilities Department contract administrator shall be informed in writing no later than 48 hours prior to the start of blasting.

INITIATION OF BLASTING OPERATIONS:

Before the initiation of blasting operations, the pre-blast surveys shall be completed, unless permission to conduct a pre-blast survey has been denied or contact with the owner or occupant of the structure could not be made after due diligence on the part of the surveyor to make such contact. The contractor shall submit to the Fire Marshall and Utilities Department a copy of a pre-blast survey log which contains a list of properties and/or utility lines eligible for pre-blast surveys, and which shows a list of properties and/or utility lines that received pre-blast surveys.

Blasting may commence only if the pre-blast neighborhood meeting is held, pre-blast surveys are completed, or permission to conduct a pre-blast survey has been denied.

The Contractor shall participate in a "pre-construction meeting" with the County's Loss Prevention Manager prior to the commencement of any blasting related to this project.

PERMIT POSTING:

The contractor shall cause to be posted in a conspicuous location, accessible to the public, a weather protected copy of the site map, a copy of the permit to use or possess explosive materials issued by the Chesterfield County Fire Marshall, and copies of the permits to blast explosives for all on-site personnel responsible for blasting operations

PROTECTIVE MEASURES:

Immediately prior to the blast, the blast area shall be cleared of all vehicular and pedestrian traffic.

All traffic shall be stopped and shall be prevented from entering the area until the blaster gives permission. Signs shall be posted to inform the public of blasting operations and to turn off radio transmitters. Precautions necessary shall be employed to ensure that persons are not injured and that adjoining property and structures, including public utilities are not damaged.

BLASTING OPERATIONS:

1. Distance from structures. There shall be no blasting within one hundred feet of any structure or utility line unless the owner of the structure(s) and/or utility line(s) consent in writing.
2. General. Blasting operations shall be conducted only by approved, competent operators familiar with the required safety precautions and the hazards involved. Blasting operations shall be performed in accordance with the instructions of the manufacturer of the explosive materials being used.
3. Blasting in close proximity. When blasting is done in close proximity to a structure, railway or highway, or any other installation, precautions shall be taken to minimize earth vibrations and air blast effects. Blasting mats or other protective means shall be used to prevent fragments from being thrown.
4. Restricted hours. Blasting operations shall only be conducted during daylight hours.

5. Personnel. Persons in charge of blasting shall not be under the influence of alcohol or drugs which impair sensory or motor skills, shall be at least 21 years of age, and shall demonstrate knowledge of all safety precautions related to the storage, handling or use of explosives or explosive materials
6. Open flames and lights. Smoking, matches, flame-producing devices, open flames, fire arms and firearms cartridges shall not be permitted inside of or within the blast site.
7. Blasting safeguards. Before a blast is fired, the person in charge shall make certain that surplus explosive materials are in a safe place, that persons and equipment are at a safe distance or under sufficient cover, and that a loud warning signal reasonably calculated to be heard by individuals not less than 100 feet of the blast site has been sounded.
8. Electric detonator precautions. Precautions shall be taken to prevent accidental discharge of electric detonators from currents induced by radar and radio transmitters, lightning, adjacent power lines, dust and snow storms, or other sources of extraneous electricity.
9. Non-electric detonator precautions. Precautions shall be taken to prevent accidental initiation of non-electric detonators from stray currents induced by lightning or static electricity.
10. Non-sparking tools. Tools used for the opening and closing of packages of explosive materials, other than metal slitters for opening paper, plastic or fiberboard containers, shall be made of non-sparking materials.
11. Only manufactured firing devices designed for use with the detonators selected shall be used.
12. All apparatus shall be kept in perfect order and shall be thoroughly inspected before and after each blasting operation.
13. All wiring connected to electrical firing devices shall be properly and adequately insulated.
14. Disposal of packaging. Empty containers and paper and fiber packaging materials that previously contained explosive materials shall be disposed of or reused in an appropriate manner.
15. Only such explosives as are absolutely necessary for the performance of the work shall be brought to the Site.
16. Abandonment. Explosive materials shall not be abandoned.
17. Other regulations. Blasting operations shall be conducted in accordance with federal, state and local regulations.

BLAST RECORDS:

A record of each blast shall be kept and retained by the contractor for at least five (5) years and shall be available for inspection upon request by the Fire Marshall or owners of property within 500 feet of the blast site or as provided by law. These records shall contain the following minimum data:

- a. Name of blasting contractor
- b. Pre-blast survey records
- c. Location and time of blast
- d. Name of certified blaster in charge
- e. Type of material blasted
- f. Number of holes bored and spacing
- g. Diameter and depth of holes
- h. Type and amount of explosives
- i. Amount of explosives per delay of 8 milliseconds or greater
- j. Method of firing and type of circuit
- k. Identification, direction, and distance, in feet, from the nearest blast hole to the nearest building or structure outside the permit area.
- l. Whether or not mats or other precautions were used
- m. Type of detonators and delay periods
- n. Type and height of stemming
- o. Seismograph and airblast records
- p. The wind direction and approximate speed at the time of the blast
- q. The general atmospheric conditions at the time of the blast

POST-BLAST SURVEY OF STRUCTURE:

If a complaint is made, or a claim of damage is stated, the contractor shall, with the owner's consent, have the surveyor conduct a post-blast inspection of the structure in question. The surveyor, blasting contractor, and/or insurance agency representative shall investigate each complaint or claim thoroughly using where appropriate the surveyor's written report to compare pre-existing damages with those being claimed.

CLAIMS:

The Contractor shall be responsible for the management of all claims whatsoever arising from the hauling, handling, use of and storing of explosives and all effects, direct or indirect, of the blasting operation. The Contractor shall be responsible for and shall make good any damage caused by the blasting or by accidental explosion of any explosives intended for use on the Works or stored on the Site. All costs associated with the protection of and repair of damage to structures, utilities and property, shall be borne by the Contractor regardless of whether the work is performed by the Contractor or the respective owner.

PART IV

REVISED PAGES

PART IV
DEVELOPER
WATER AND SEWER PROJECT
CONSTRUCTION SPECIFICATIONS
CHESTERFIELD COUNTY, VIRGINIA

INSTRUCTIONS for viewing and/or printing this document:

PART IV is divided into three (3) sections – GENERAL CONDITIONS, TECHNICAL SPECIFICATIONS and APPENDICES. Each section has been set up with bookmarks making it more convenient to locate various topics within the document. After pulling up the section you wish to view or print, click on “BOOKMARKS” in the left hand margin of the document. (When printing the document, please remember to print this table of contents and include it in your book.)

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4. The Contractor shall, each day when necessary to blast, set up an approximate schedule of blasting operations, and provide 24 hours notice to the County, and property owners with occupied buildings within 1000 feet of blasting.
5. The Contractor shall use mats to minimize noise impact on nearby residents.
6. The County reserves the right to require the Contractor to have a repair crew and equipment available on-site to repair any damage caused to the Chesterfield utility by blasting operations.
7. Before any blasting can commence, a blasting survey must be conducted in order to assess the quality of residential homes within a 500 feet radius. Additional requirements (See Appendix B).

3.06 BACKFILL FOR TRENCHES

- A. General: After the installation of the pipe has been field inspected, the trenches shall be backfilled with fine, loose earth deposited carefully on both sides of the pipe or with the appropriate fill material specified on the trench detail or the County's Standard Details Section. Large clods, sticks, stones, and other unsatisfactory material must be excluded from the backfill around and to 12 " above the pipe. The fill or in the case of plastic pipe where stone is used for bedding and backfill to the top of the pipe, the stone shall be carefully rammed by hand or pneumatic tamping methods under, on both sides and to within 2-3 feet on top of the pipe. The remainder of the backfilling may be done by hand or with mechanical equipment in lifts no greater than 12 inches. Where settlement occurs, the trench shall be refilled, contoured and compacted by an approved method to conform to the surface of the ground. Sheeting and bracing shall, in general, be removed as the backfilling progresses, and in such a manner as to avoid caving of the trench. Voids left by the withdrawal of the sheeting or shoring shall be carefully filled and rammed. Where in the opinion of the County, damage is liable to result from the withdrawal of the sheeting, it shall be left in place. No rock should come in contact with pipe.
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APPENDIX B

BLASTING REQUIREMENTS

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All photographs shall be identified by number. The written report shall be signed by an authorized representative of the company or firm that performed the pre-blast surveys.

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The Utilities Department contract administrator shall be informed in writing no later than 48 hours prior to the start of blasting.

INITIATION OF BLASTING OPERATIONS:

Before the initiation of blasting operations, the pre-blast surveys shall be completed, unless permission to conduct a pre-blast survey has been denied or contact with the owner or occupant of the structure could not be made after due diligence on the part of the surveyor to make such contact. The contractor shall submit to the Fire Marshall and Utilities Department a copy of a pre-blast survey log which contains a list of properties and/or utility lines eligible for pre-blast surveys, and which shows a list of properties and/or utility lines that received pre-blast surveys.

Blasting may commence only if the pre-blast neighborhood meeting is held, pre-blast surveys are completed, or permission to conduct a pre-blast survey has been denied.

The Contractor shall participate in a "pre-construction meeting" with the County's Loss Prevention Manager prior to the commencement of any blasting related to this project.

PERMIT POSTING:

The contractor shall cause to be posted in a conspicuous location, accessible to the public, a weather protected copy of the site map, a copy of the permit to use or possess explosive materials issued by the Chesterfield County Fire Marshall, and copies of the permits to blast explosives for all on-site personnel responsible for blasting operations

PROTECTIVE MEASURES:

Immediately prior to the blast, the blast area shall be cleared of all vehicular and pedestrian traffic.

All traffic shall be stopped and shall be prevented from entering the area until the blaster gives permission. Signs shall be posted to inform the public of blasting operations and to turn off radio transmitters. Precautions necessary shall be employed to ensure that persons are not injured and that adjoining property and structures, including public utilities are not damaged.

BLASTING OPERATIONS:

3. Distance from structures. There shall be no blasting within one hundred feet of any structure or utility line unless the owner of the structure(s) and/or utility line(s) consent in writing.
4. General. Blasting operations shall be conducted only by approved, competent operators familiar with the required safety precautions and the hazards involved. Blasting operations shall be performed in accordance with the instructions of the manufacturer of the explosive materials being used.
3. Blasting in close proximity. When blasting is done in close proximity to a structure, railway or highway, or any other installation, precautions shall be taken to minimize earth vibrations and air blast effects. Blasting mats or other protective means shall be used to prevent fragments from being thrown.
4. Restricted hours. Blasting operations shall only be conducted during daylight hours.

5. Personnel. Persons in charge of blasting shall not be under the influence of alcohol or drugs which impair sensory or motor skills, shall be at least 21 years of age, and shall demonstrate knowledge of all safety precautions related to the storage, handling or use of explosives or explosive materials
6. Open flames and lights. Smoking, matches, flame-producing devices, open flames, fire arms and firearms cartridges shall not be permitted inside of or within the blast site.
7. Blasting safeguards. Before a blast is fired, the person in charge shall make certain that surplus explosive materials are in a safe place, that persons and equipment are at a safe distance or under sufficient cover, and that a loud warning signal reasonably calculated to be heard by individuals not less than 100 feet of the blast site has been sounded.
8. Electric detonator precautions. Precautions shall be taken to prevent accidental discharge of electric detonators from currents induced by radar and radio transmitters, lightning, adjacent power lines, dust and snow storms, or other sources of extraneous electricity.
9. Non-electric detonator precautions. Precautions shall be taken to prevent accidental initiation of non-electric detonators from stray currents induced by lightning or static electricity.
10. Non-sparking tools. Tools used for the opening and closing of packages of explosive materials, other than metal slitters for opening paper, plastic or fiberboard containers, shall be made of non-sparking materials.
11. Only manufactured firing devices designed for use with the detonators selected shall be used.
12. All apparatus shall be kept in perfect order and shall be thoroughly inspected before and after each blasting operation.
13. All wiring connected to electrical firing devices shall be properly and adequately insulated.
14. Disposal of packaging. Empty containers and paper and fiber packaging materials that previously contained explosive materials shall be disposed of or reused in an appropriate manner.
15. Only such explosives as are absolutely necessary for the performance of the work shall be brought to the Site.
16. Abandonment. Explosive materials shall not be abandoned.
17. Other regulations. Blasting operations shall be conducted in accordance with federal, state and local regulations.

BLAST RECORDS:

A record of each blast shall be kept and retained by the contractor for at least five (5) years and shall be available for inspection upon request by the Fire Marshall or owners of property within 500 feet of the blast site or as provided by law. These records shall contain the following minimum data:

- a. Name of blasting contractor
- b. Pre-blast survey records
- c. Location and time of blast
- d. Name of certified blaster in charge
- e. Type of material blasted
- f. Number of holes bored and spacing
- g. Diameter and depth of holes
- h. Type and amount of explosives
- i. Amount of explosives per delay of 8 milliseconds or greater
- j. Method of firing and type of circuit
- k. Identification, direction, and distance, in feet, from the nearest blast hole to the nearest building or structure outside the permit area.
- l. Whether or not mats or other precautions were used
- m. Type of detonators and delay periods
- n. Type and height of stemming
- o. Seismograph and airblast records
- p. The wind direction and approximate speed at the time of the blast
- q. The general atmospheric conditions at the time of the blast

POST-BLAST SURVEY OF STRUCTURE:

If a complaint is made, or a claim of damage is stated, the contractor shall, with the owner's consent, have the surveyor conduct a post-blast inspection of the structure in question. The surveyor, blasting contractor, and/or insurance agency representative shall investigate each complaint or claim thoroughly using where appropriate the surveyor's written report to compare pre-existing damages with those being claimed.

CLAIMS:

The Contractor shall be responsible for the management of all claims whatsoever arising from the hauling, handling, use of and storing of explosives and all effects, direct or indirect, of the blasting operation. The Contractor shall be responsible for and shall make good any damage caused by the blasting or by accidental explosion of any explosives intended for use on the Works or stored on the Site. All costs associated with the protection of and repair of damage to structures, utilities and property, shall be borne by the Contractor regardless of whether the work is performed by the Contractor or the respective owner.

PART V

REVISED PAGES

| <u>Piping Location</u> | <u>Method of Restraint</u> |
|---|---|
| Dead Ends (Culdesac), etc | Concrete Thrust Block |
| Horizontal Bends, Reducers, Tees, & Crosses: | |
| <u>good soil</u> condition | Concrete Thrust Block |
| <u>poor soil</u> condition, i.e. creeks, fills, etc. as determined by design engineer | Approved Mechanical Joint Restraint System |
| Carrier Pipe thru Casings | Approved Mechanical Joint Restraint System |
| Vertical Bends | Approved Mechanical Joint Restraint System |
| Fire Hydrant Laterals | Approved Mechanical Joint Restraint System <u>or</u> Concrete Thrust Block |
| *All Valves | Approved Mechanical Joint Restraint System |

*All valves should be as close to a tee as possible and restrained to that tee, using approved mechanical joint restrainers. Where the valve cannot be installed and restrained at a tee, the valve (12" and larger) must be restrained using an approved Mechanical Joint Restraint System.

When Mechanical Joint Restraint Systems are required due to specific applications) as referenced above, special design considerations, or poor soil conditions the engineer shall provide the calculations used in determining the required length of pipe on either side of the fitting to be restrained. Also, the engineer shall provide special plan details for each necessary mechanical joint restraint system with a justification for its determined installation over thrust blocking.

Mechanical Joint Restraint Systems require that sufficient lengths of pipe in addition to the fittings, be restrained. The standard length of pipe requiring restraint varies from application to application and is designed based on variables such as soil bearing capacity, soil condition, pipe size, pipe material, pressure and fittings.